

CLAIMS AMENDMENTS

1. (currently amended) A thermal indicator for visually determining and monitoring temperature of cooking food, comprising:
 - a) a body having an orifice;
 - b) indicating means capable of moving through the orifice relative to the body from a first position to a second position for visually indicating when a preselected temperature has been reached and that the food is cooked to a desired temperature and doneness; and
 - c) a thermopolymeric switching medium contained within the body for allowing said indicating means to dynamically indicate when said preselected temperature has been reached, wherein said thermopolymeric switching medium comprises at least one thermopolymeric material that, when at a temperature below the predetermined temperature, maintains said indicating means at the first position, and that, when at a temperature equal to or higher than the predetermined temperature, yields to permit release of said indicating means to the second position visually indicating that the food is cooked to a desired temperature and doneness,
whereby the thermopolymeric switching medium undergoes a thermal transition from a solid phase to a liquid phase at the predetermined temperature indicating the food is cooked to the desired temperature and doneness.
2. (original) The thermal indicator as claimed in Claim 1, wherein the thermopolymeric switching medium is an organic polymer.
3. (currently amended) The thermal indicator as claimed in Claim 1, further comprising at least one inert additive selected from the group consisting of sugars, salts, starches, cellulose non-melting metal filings, powdered plastics, polymers, silicone, silicates, chromatography resins, ceramic resins, chalk, glass, sand, air, oils, water, and high boiling liquid polymeric materials, and combinations thereof.

4. (original) The thermal indicator as claimed in Claim 3, wherein the inert additive is present in an amount between 0.1% to 99% by weight of thermopolymeric switching medium.

5. (original) The thermal indicator as claimed in Claim 3, wherein the inert additive is present in an amount between 5% to 95% by weight of thermopolymeric switching medium.

6. (original) The thermal indicator as claimed in Claim 3, wherein the inert additive is present in an amount between 10% to 90% by weight of thermopolymeric switching medium.

7. (original) The thermal indicator as claimed in Claim 3, wherein the inert additive is present in an amount between 20% to 80% by weight of thermopolymeric switching medium.

8. (original) The thermal indicator as claimed in Claim 1, further comprising at least one interactive additive selected from the group consisting of bee's wax, root extracts, long chain hydrocarbon analogs from the jojoba plant, petroleum distillation analogs, and synthetic organic analogs, and combinations thereof.

9. (previously presented) The thermal indicator as claimed in Claim 8, wherein the at least one interactive additive is selected from the group consisting of short and long chain alcohols, esters, acrylic esters, fluorinated hydrocarbons, docosanol (C22), tricosanol (C23), tetracosanol (C24), pentacosanol (C25), hexacosanol (C26), heptacosanol (C27), octacosanol (C28), nonacosanol (C29), triacontanol (C30) and extended analogs, and combinations thereof.

10. (original) The thermal indicator as claimed in Claim 8, wherein the at least one interactive additive is present in an amount between 0.1% to 99% by weight of thermopolymeric switching medium.

11. (original) The thermal indicator as claimed in Claim 8, wherein the at least one interactive additive is present in an amount between 5% to 95% by weight of thermopolymeric switching medium.

12. (original) The thermal indicator as claimed in Claim 8, wherein the at least one interactive additive is present in an amount between 10% to 90% by weight of thermopolymeric switching medium.

13. (original) The thermal indicator as claimed in Claim 8, wherein the at least one interactive additive is present in an amount between 20% to 80% by weight of thermopolymeric switching medium.

14. (original) The thermal indicator as claimed in Claim 1, further comprising at least one emulsifier selected from the group consisting of lipids, long chain alcohols, lecithins, glycol lipids, quaternized amines with lipid tails, and charged ionic detergents, and combinations thereof.

15. (original) The thermal indicator as claimed in Claim 14, wherein the at least one emulsifier is present in an amount between 0.001% to 10% by weight of thermopolymeric switching medium.

16. (original) The thermal indicator as claimed in Claim 14, wherein the at least one emulsifier is present in an amount between 0.01% to 5% by weight of thermopolymeric switching medium.

17. (original) The thermal indicator as claimed in Claim 14, wherein the at least one emulsifier is present in an amount between 0.1% to 1% by weight of thermopolymeric switching medium.

18. (currently amended) A thermal indicator for visually determining and monitoring temperature of cooking food, comprising:

- a) a barrel having an orifice communicating with a cavity within said barrel, said barrel being adapted for insertion into the article to be monitored;
- b) an indicator disposed in said cavity and adapted for sliding travel therein between a retracted position with said indicator partially protruding from said cavity within said barrel indicating the food is in an uncooked state and an extended position visually indicating that the food is in a cooked state and that the food is cooked to a desired temperature and doneness;
- c) means for resiliently biasing said indicator away from said retracted position and toward said extended position; and
- d) an organic thermopolymeric switching medium for releasably retaining said indicator in said retracted position,

wherein said thermopolymeric switching medium, when at a temperature below the predetermined temperature, maintains said indicator in said retracted position, and when at a temperature equal to or higher than the predetermined temperature, yields to permit release of said indicator, said biasing means urging said plunger into said extended position for visual indication that the food is cooked to a desired temperature and doneness,

whereby the thermopolymeric switching medium undergoes a thermal transition from a solid phase to a liquid phase at the predetermined temperature indicating the food is cooked to the desired temperature and doneness.

19. (cancelled).

20. (previously presented) The thermal indicator as claimed in Claim 18, further comprising at least one inert additive selected from the group consisting of sugars, salts, starches, cellulose non-melting metal filings, powdered plastics, polymers, silicone, silicates, chromatography resins, ceramic resins, chalk, glass, sand, air, oils, water, and high boiling liquid polymeric materials, and combinations thereof.

21. (original) The thermal indicator as claimed in Claim 20, wherein the inert additive is present in an amount between 0.1% to 99% by weight of thermopolymeric switching medium.

22. (original) The thermal indicator as claimed in Claim 20, wherein the inert additive is present in an amount between 5% to 95% by weight of thermopolymeric switching medium.

23. (original) The thermal indicator as claimed in Claim 20, wherein the inert additive is present in an amount between 10% to 90% by weight of thermopolymeric switching medium.

24. (original) The thermal indicator as claimed in Claim 20, wherein the inert additive is present in an amount between 20% to 80% by weight of thermopolymeric switching medium.

25. (original) The thermal indicator as claimed in Claim 18, further comprising at least one interactive additive selected from the group consisting of bee's wax, root extracts, long chain hydrocarbon analogs from the jojoba plant, petroleum distillation analogs, and synthetic organic analogs, and combinations thereof.

26. (previously presented) The thermal indicator as claimed in Claim 25, wherein the at least one interactive additive is selected from the group consisting of short and long chain alcohols, esters, acrylic esters, fluorinated hydrocarbons, docosanol (C22), tricosanol (C23), tetracosanol (C24), pentacosanol (C25), hexacosanol (C26), heptacosanol (C27), octacosanol (C28), nonacosanol (C29), triacontanol (C30) and extended analogs, and combinations thereof.

27. (original) The thermal indicator as claimed in Claim 25, wherein the at least one interactive additive is present in an amount between 0.1% to 99% by weight of thermopolymeric switching medium.

28. (original) The thermal indicator as claimed in Claim 25, wherein the at least one interactive additive is present in an amount between 5% to 95% by weight of thermopolymeric switching medium.

29. (original) The thermal indicator as claimed in Claim 25, wherein the at least one interactive additive is present in an amount between 10% to 90% by weight of thermopolymeric switching medium.

30. (original) The thermal indicator as claimed in Claim 25, wherein the at least one interactive additive is present in an amount between 20% to 80% by weight of thermopolymeric switching medium.

31. (original) The thermal indicator as claimed in Claim 18, further comprising at least one emulsifier selected from the group consisting of lipids, long chain alcohols, lecithins, glycol lipids, quaternized amines with lipid tails, and charged ionic detergents, and combinations thereof.

32. (original) The thermal indicator as claimed in Claim 31, wherein the at least one emulsifier is present in an amount between 0.001% to 10% by weight of thermopolymeric switching medium.

33. (original) The thermal indicator as claimed in Claim 31, wherein the at least one emulsifier is present in an amount between 0.01% to 5% by weight of thermopolymeric switching medium.

34. (original) The thermal indicator as claimed in Claim 31, wherein the at least one emulsifier is present in an amount between 0.1% to 1% by weight of thermopolymeric switching medium.

35. (currently amended) A thermal indicator for visually determining and monitoring the temperature of cooking food products, comprising:

- a) a barrel having an orifice communicating with a cavity within said barrel, said barrel being adapted for insertion into the article to be monitored;
- b) an indicator disposed in said cavity and adapted for sliding travel therein between a retracted position indicating the food is in an uncooked state and an extended position indicating the food is in a cooked state and visually indicating that the food is cooked to a desired temperature and doneness;
- c) means for resiliently biasing said indicator away from said retracted position and toward said extended position;
- d) organic thermopolymeric switching medium for releasably retaining said indicator in said retracted position;
- e) at least one inert additive present in an amount between 10% to 90% by weight of thermopolymeric switching medium and selected from the group consisting of sugars, salts, starches, cellulose non-melting metal filings, powdered plastics, polymers, silicone, silicates, chromatography resins, ceramic resins, chalk, glass, sand, air, oils, water, and high boiling liquid polymeric materials, and combinations thereof;
- f) at least one interactive additive present in an amount between 10% to 90% by weight of thermopolymeric switching medium and selected from the group consisting of bee's wax, root extracts, long chain hydrocarbon analogs from the jojoba plant, petroleum distillation analogs, and synthetic organic analogs, and combinations thereof; and
- g) at least one emulsifier present in an amount between 0.01% to 1% by weight of thermopolymeric switching medium and selected from the group consisting of lipids, long chain alcohols, lecithins, glycol lipids, quaternized amines with lipid tails, and charged ionic detergents, and combinations thereof,

~~wherein the inert additive is present in an amount between 0.1% to 99% by weight of thermopolymeric switching medium, the at least one interactive additive is present in an amount between 0.1% to 99% by weight of thermopolymeric switching medium, and the at least one emulsifier is present in an amount between 0.001% to 10% by weight of thermopolymeric switching medium, and~~

wherein said thermopolymeric switching medium, when at a temperature below the predetermined temperature, maintains said indicator in said retracted position, and when at a temperature equal to or higher than the predetermined temperature, yields to permit release of said indicator, said biasing means urging said plunger into said extended position for visual indication that the food is cooked to a desired temperature and doneness.

whereby the thermopolymeric switching medium undergoes a thermal transition from a solid phase to a liquid phase at the predetermined temperature indicating the food is cooked to the desired temperature and doneness.

36. (cancelled).
37. (cancelled).
38. (cancelled).
39. (cancelled).
40. (cancelled).
41. (cancelled).
42. (currently amended) The thermal indicator as claimed in Claim 38 35, wherein the inert additive is present in an amount between 20% to 80% by weight of thermopolymeric switching medium and the at least one interactive additive is present in an amount between 20% to 80% by weight of thermopolymeric switching medium.

43. (currently amended) The thermal indicator as claimed in Claim 38 42, wherein the at least one interactive additive is selected from the group consisting of short and long chain alcohols, esters, acrylic esters, fluorinated hydrocarbons, docosanol (C22), tricosanol (C23), tetracosanol (C24), pentacosanol (C25), hexacosanol (C26), heptacosanol (C27), octacosanol (C28), nonacosanol (C29), triacontanol (C30) and extended analogs, and combinations thereof.